



NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.:

CECTC-MK-PMC-2017-18

Date : 27.05.2014

**ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11**

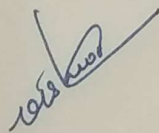
Client : **Executive Engineer**, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency : **Sri. M. Krishnamurthy**, Contractor, Bangalore.
Name of Work : Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Refrence : EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Date of Testing : 27.05.2014
Material Type : Wet Mix Macadam
Sample Location : At Site

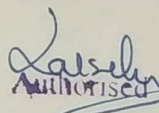
As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	23.65	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.



For Civil Experts

Authorized Signature

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2017-18

Date : 27.05.2014

**ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11**

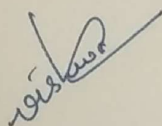
Client : **Executive Engineer**, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency : **Sri. M. Krishnamurthy**, Contractor, Bangalore.
Name of Work : Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Refrence : EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Date of Testing : 27.05.2014
Material Type : Wet Mix Macadam
Sample Location : At Site

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	22.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

Note:

1. The report shall not be reproduced, except in full, without the written approval of the laboratory.
2. The results indicated above are based on the tests carried out on the samples received in the laboratory.
3. Any Query regarding the report must be reported within 15 days from the date of testing.



For Civil Experts


Authorised Signature

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No. CECTC-MK-PMC-2017-18

Date: 27.05.2014

**DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE
AGGREGATES**

Client	Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of Work	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward
Refrence	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Wet Mix macadam
Date of Testing	27.05.2014

Result : Flakiness Index = 14.26%

Elongation Index = 9.85%

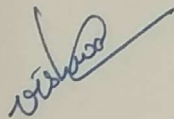
Result : Combined Flakiness & Elongation index 24.11%

Comments:

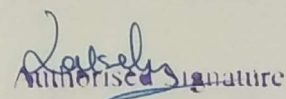
→ Maximum allowable Flakiness & Elongation Index for Wet Mix macadam is 30%

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples recieved in the laboratory
- Any Query regarding the report must be reported within 15days from the date of testing.



For Civil Experts



Authorised Signature



NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No. CECTC-MK-PMC-2014-15

Date: 27.05.2014

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of Work	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward
Refrence	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Wet Mix macadam
Date of Testing	27.05.2014

Result : Flakiness Index = **15.26%**

Elongation Index = **10.85%**

Result : Combined Flakiness & Elongation index **26.11%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Wet Mix macadam is 30%

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples recieved in the laboratory
- Any Query regarding the report must be reported within 15days from the date of testing.

For Civil Experts

Authorised Signatory

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2014-15

Date: 03.06.2014

TEST REPORT

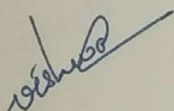
Client	:	Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency	:	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of the work	:	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Reference	:	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Source of location	:	Hot mix Plant, Bangalore
Date of testing	:	03.06.2014

The results of the tests conducted on the bitumen sample using for Bituminous Macadam

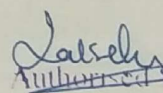
Sl. No	Description	Test Result	Requirement as per IS:73:2013
1	Penetration at 25 °C, 1/10 mm	62	60 to 70
2	Softening point, °C	52	Min. 45
3	Ductility at 27°C, cm	100 >	Min. 50
4	Flash Point, °C	296	Min. 220

Note:

- ⇒ This test report shall not be reproduced except in full, without written approval of the laboratory.
- ⇒ The results indicated above are based on the tests carried out on the samples received in the laboratory.
- ⇒ Any Query regarding the report must be reported within 15 days from the date of testing.



For Civil Experts


Authorised Signatory

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2014-15

Date: 03.06.2014

**DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE
AGGREGATES**

Client	Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of Work	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Refrence	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Technical Reference	IS 2386(Part 1) 1963 (RA 2007)
Type of Mix	Bituminous Macadam
Date of Testing	03.06.2014

Result : Flakiness Index = **13.44%**

Elongation Index = **9.68%**

Result : Combined Flakiness & Elongation index **23.12%**

Comments:

→ Maximum allowable Flakiness & Elongation Index for Bituminous Macadam is 30%

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples recieved in the laboratory
- Any Query regarding the report must be reported within 15 days from the date of testing.

(Signature)

For Civil Experts

(Signature)
Authorised signature

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2014-15

Date: 03.06.2014

Specific Gravity And Water Absorption Test

IS: 2386 Part III

Client	Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
Agency	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of the Work	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Reference	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Source / Location	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	03.06.2014

Sl. No.	Details	Notation	Test Number			Mean Value
			Test 1	Test 2	Test 3	
1	Weight of aggregate suspended in water with the basket	W_1 g	2016	2014	2012	
2	Weight of basket suspended in water	W_2 g	752	752	752	
3	Weight of saturated aggregate in water	$(W_1 - W_2) = W_s$ g	1264	1262	1260	
4	Weight of saturated surface dry aggregate in air	W_3 g	2011	2013	2012	
5	Weight of water equal to the volume of the aggregate	$(W_3 - W_s)$ g	747	751	752	
6	Weight of oven dried aggregate	W_4 g	2002	2003	2001	
7	Specific Gravity	$W_4 / (W_3 - W_s)$	2.680	2.667	2.661	2.670
8	Apparent Specific gravity	$W_4 / (W_4 - W_s)$	2.713	2.703	2.700	2.707
9	Water Absorption	$((W_3 - W_4) * 100) / W_4$	0.45%	0.50%	0.55%	0.50%

Comments:

→ Maximum allowable Aggregate Water absorption value for Bituminous Macadam is 2.0%

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples received in the laboratory
- Any Query regarding the report must be reported within 15 days from the date of testing

For Civil Experts

Laxmi
Authorized Signature

NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2014-15

Date: 04.06.2014

Aggregate Gradation Test
IS : 2386 Part I

Client	Executive Engineer, Rajarajeshwarinagar Division, BBMP, Bangalore.
Agency	Sri. M. Krishnamurthy, Contractor, Bangalore.
Name of the work	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
Reference	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
Sample ID	Hotmix Plant, Bangalore.
Type of Mix	Bituminous Macadam
Date of Testing	04.06.2014

5250 gm						Remarks
SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	
26.5	0	0	0	100	100	
19	395	7.52	7.52	92.48	90-100	
13.2	1685	32.10	39.62	60.38	56-88	
4.75	1589	30.27	69.89	30.11	16-36	
2.36	741	14.11	84.00	16.00	4-19	
0.3	368	7.01	91.01	8.99	2-10	
0.075	85	1.62	92.63	7.37	0-8	

5050 gm						Remarks
SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	Grade-II As per MORTH	
26.5	0	0	0	100	100	
19	452	8.95	8.95	91.05	90-100	
13.2	1730	34.26	43.21	56.79	56-88	
4.75	1823	36.10	79.31	20.69	16-36	
2.36	758	15.01	94.32	5.68	4-19	
0.3	100	1.98	96.30	3.70	2-10	
0.075	72	1.43	97.72	2.28	0-8	

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples received in the laboratory
- Any Query regarding the report must be reported within 15 days from the date of testing

[Signature]

For Civil Experts

[Signature]
Authorised Signature
Quality Control / Assurance / Audit

Building Material Testing | Bridge Load Testing | Structural Strengthening Solutions | Quality Control / Assurance / Audit -
Proof Checking (Structural Designs & Drawings) | Soil Stabilization and Shoring Services | Non - Destructive Testing

Job No.: CECIC-MK-FMC-2014-15 Date: 04.06.2014
NABL ACCREDITED AS PER ISO/IEC 17025:2005
BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS MACADAM MIX
AASHTO T 164 & AASHTO T 30

CLIENT	Executive Engineer, Rajarajeshwarinagar Division, BBMP, Bangalore.
AGENCY	Sri. M. Krishnamurthy, Contractor, Bangalore.
NAME OF THE WORK	Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
REFERENCE	EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	04.06.2014

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	483	481
3. Weight of Asphalt and Mineral matter Extracted,	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	17	19.00
7. Bitumen content in %	3.40	3.50
8. Average	3.45	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cumulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	22.2	4.60	4.60	95.40	90-100
13.2	170.3	35.26	39.86	60.14	56-88
4.75	154.2	31.93	71.78	28.22	16-36
2.36	64.5	13.35	85.13	14.87	4-19
0.3	29.7	6.15	91.28	8.72	2-10
0.075	11.7	2.42	93.71	6.29	0-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cumulative Retained	% Passing	Gradation
26.5	0	0	0	100	100
19	26.2	5.24	5.24	94.76	90-100
13.2	135.7	27.14	32.38	67.62	56-88
4.75	190.2	38.04	70.42	29.58	16-36
2.36	90.3	18.06	88.48	11.52	4-19
0.3	23.5	4.70	93.18	6.82	2-10
0.075	10.6	2.12	95.30	4.70	0-8

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples received in the laboratory
- Any Query regarding the report must be reported within 15 days from the date of testing

For Civil Experts

Signature
Authorized Signature



NABL ACCREDITED AS PER ISO/IEC 17025:2005

Job No.: CECTC-MK-PMC-2014-15

Date: 04.06.2014

DETERMINATION OF RATE OF SPREAD TACK COAT

CLIENT	: Executive Engineer, Rajarajeshwari Nagara Division, BBMP, Bangalore.
AGENCY	: Sri. M. Krishnamurthy, Contractor, Bangalore.
NAME OF THE WORK	: Providing and Laying HDPE Water line in HMT Layout Block 4in JP Park Ward No 17.
REFERENCE	: EE/RRND/PR/06-1/2013-14 Dated: 07.01.2014
DATE OF TESTING	: 04.06.2014

Determination	Unit	Test No	
		1	2
Size of Plate (mxm)	mt	0.45 X 0.45	0.45 X 0.45
Area of Plate (a)	Sq.m	0.2025	0.2025
Intial Wt of empty Plate (b)	Kg	1.625	1.627
Final weight of plate after application of prime /Tack Coat (c)	Kg	1.682	1.676
Weight of Prime/Tack Coat (d=c-b)	Kg	0.0570	0.0490
Rate of spread of prime /tack coat	kg/Sq.m	0.281	0.242
Average	kg/Sq.m	0.262	
Specified Limit	kg/Sq.m	0.25 Kg/sq.m	

All above Informations are furnished by the Agency

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory
- The results indicated above are based on the tests carried out on the samples recieved in the laboratory
- Any Query regarding the report must be reported within 15 days from the date of testing.

[Signature]

For Civil Experts

[Signature]
Authorised Signature